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Final Report

Mine Seal Project, Phase 9
is & Clark and Jefferson Counties, Montana
IFB 4316-G

January, 1987

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Mine Seal Project, Phase 9
Lewis & Clark and Jefferson Counties, Montana
IFB 4316-G

Prepared for: Mr. Richard Juntunen, Chief
Abandoned Mine Reclamation
Bureau
Department of State Lands
1625 11th Ave.
Helena, MT 59620

Prepared by: L.C. Hanson Company
Consulting Engineers
P.O. Box 299
Helena, MT 59624

Project Inspector: Allen Sawitke, P.E.



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I. Introduction

A. Project Objectives

The Phase 9 Mine Seal Project was undertaken to eliminate the public safety hazards resulting from unreclaimed mine openings at several abandoned hardrock mines in Lewis & Clark and Jefferson Counties, Montana. Closure of dangerous shafts and adits through backfilling, bulkhead installation, and/or fencing was accomplished to eliminate accidental entry.

B. Project Location

The project covered fourteen sites close to Helena, Montana in the Montana City, Mount Ascension & North Elkhorn Mining Districts. Legal descriptions are listed below and site locations are shown on the vicinity map contained herein.

Montana City Mining District, Jefferson County

Dike Lode Site	T9N R2W Sec. 18 NW
Gold Bug Site	T9N R2W Sec. 18 NE
Kaiser Site	T9N R2W Sec. 18 NW

Mount Ascension Mining District, Jefferson and Lewis & Clark Counties

Diehl Sites #1 & #2	T9N R3W Sec. 5 S
May-Be-So Site	T9N R3W Sec. 4 NE
Mount Ascension Heights Site	T10N R3W Sec. 31 SW
Red Letter Site	T9N R3W Sec. 5 NW
Susie Site	T9N R3W Sec. 5 NE
Touchstone Site	T10N R3W Sec. 31 SE
Walker Site	T9N R3W Sec. 4 NE

North Elkhorn Mining District, Jefferson County

Maupin Creek Site	T8N R2W Secs. 8 & 17
McClellan Creek Site	T9N R2W Sec. 17 SW
Mill Creek Site	T8N R2W Sec. 7 SE
Strawberry Creek Site	T8N R2W Sec. 7 NW

C. History

Hardrock mining has taken place in Montana since 1862 and was essentially unregulated from a reclamation standpoint for over one hundred years. This resulted in thousands of hazardous shafts and adits in mining districts across the state.

A brief history of mining districts included in the Phase 9 Mine Seal Project follows. Where production statistics are available for individual sites, they are noted.

Montana City Mining District

Production totals from lode mines in the Montana City District from 1905 - 1951 are 135 ounces of gold, 1,608 ounces of silver, 8,046 pounds of copper and 3,530 pounds of zinc with a total value of \$6,909.

Mount Ascension Mining District

This district is not referenced specifically in mining literature but is within the Helena district whose history follows.

Placer gold was discovered in 1864 and the first lode mine that same year. Total production is estimated at \$23.5 million to the end of 1928 of which \$16.1 million was in placer gold, \$6.3 million in lode gold, the rest from silver, lead, copper, and zinc.

North Elkhorn Mining District

This area has yielded gold from both placers and deep mines. Production of lode mines from 1903 - 1956 is reported at 15,427 ounces of gold, 118,057 ounces of silver, 103,753 pounds of copper, 740,792 pounds of lead, 12,042 pounds of zinc for a total value of \$559,831.

D. Site Description And Problems

The sites included in this project are located in or near residential areas, historic sites, close to public roads or in recreation areas. All mine openings threatened public safety. The shafts involved were of depth great enough to prevent unaided escape upon entry. Adits were reclaimed to protect the curious from unsuspected dangers.

II. Description of Project Reclamation

A. Project Planning

Backfill was recommended for all mine openings to permanently eliminate the hazards. Many landowners refused to allow this, insisting instead on accessing bulkheads or fencing. These techniques do accomplish the goals of preventing accidental entry but are semi-permanent in nature and may require maintenance in the future.

B. Chronological History

Pre-Bid Conference	August 21, 1984
Bid Opening	August 31, 1984
Contract Award	September 4, 1984
Contract Awarded To:	

Allen Electric, Inc.
P.O. Box 5566
Helena, MT 59604
(406)442-3780

Pre-Construction Meeting	September 11, 1984
Notice to Proceed	September 20, 1984
Began Work	September 13, 1984
Temporary Winter Shutdown	October 26, 1984
Resumed Work	May 16, 1985
Project Completed	June 3, 1985

C. Equipment

Air Compressor with Air Drill
Dynamite for Blasting Post Holes
Cat D-7 Dozer
Backhoe

D. Construction Operations

The Contractor performed the following:

1. Backfilled 2 mine openings (adits)
2. Backfilled 1 adit
3. Backfilled 17 shafts
4. Installed 6 foot chainlink fence
5. Installed combination barbed and woven wire fence at two sites
6. Sealed shaft openings
7. Revegetated all areas disturbed by construction activities

III. Cost Summary

A. Final Payment Request

A copy of the Final Payment Request is contained in Appendix A. That document contains the final quantities and costs for each work item.

B. Change Order

The following Change Order was executed during the course of the project:

1. Change Order #1 - Additional dozer work and seeding required to close Maupin Creek shafts

C. Cost Per Site / Unit

The following summary describes the work performed (with estimated or measured quantities) and the total cost for each site:

- | | |
|---|-------------|
| 1. Diehl Sites #1 & #2 | \$ 257.00 |
| a. Backfill 1 adit & 2 shafts (163 c.y.) | |
| b. Seed, fertilize & mulch | |
| 2. Dike Lode Site | \$ 3,614.00 |
| a. Install wire fence (16 rods) | |
| b. Install hazard signs (8 each) | |
| c. Seed, fertilize & mulch | |
| 3. Gold Bug Site | \$ 1,513.00 |
| a. Install 6 foot chainlink fence (117.1 c.y.) | |
| b. Install hazard signs (4 each) | |
| c. Seed, fertilize & mulch | |
| 4. Kaiser Site | \$ 397.00 |
| a. Backfill 1 shaft (275 c.y.) | |
| b. Seed, fertilize & mulch | |
| 5. Maupin Creek Site | \$ 468.00 |
| a. Backfill 3 shafts (333 c.y.) | |
| incl. C.O. work | |
| b. Seal shaft with lock and hinges, board up adjacent opening | |
| c. Seed, fertilize & mulch | |
| 6. McClellan Creek Site | \$ 2,404.00 |
| a. Install wire fence (10.7 rods) | |
| b. Install hazard signs (4 each) | |
| c. Seed, fertilize & mulch | |
| 7. May Be So Site | \$ 109.00 |
| a. Backfill mine opening (adit) | |
| b. Seed, fertilize & mulch | |

8. Mill Creek Site	\$ 109.00
a. Backfill 1 shaft (44 c.y.)	
b. Seed, fertilize & mulch	
9. Mount Ascension Heights Site	\$ 185.00
a. Backfill 3 shafts (105 c.y.)	
b. Seed, fertilize & mulch	
10. Red Letter Site	\$ 131.00
a. Backfill 1 shaft (62 c.y.)	
b. Seed, fertilize & mulch	
11. Strawberry Creek Site	\$ 102.00
a. Backfill 1 shaft (39 c.y.)	
b. Seed, fertilize & mulch	
12. Susie Site	\$ 135.00
a. Backfill 1 shaft (65 c.y.)	
b. Seed, fertilize & mulch	
13. Touchstone Site	\$ 109.00
a. Backfill mine opening (adit)	
b. Seed, fertilize & mulch	
14. Walker Site	\$ 129.00
a. Backfill 3 shafts (60 c.y.)	
b. Seed, fertilize & mulch	

Total Project Cost	\$ 9,662.00

IV. Summary

A. Completed Reclamation

The required work was completed within the Contract time allowed.

The project resulted in the complete plugging of some adits and shafts and limits access to other adits and shafts by installed fences. Hazard signs were installed where appropriate. Revegetation of disturbed areas was accomplished.

B. Comments

The Contractor completed the work as specified.

Monitoring of all sites should be undertaken periodically to insure all backfilling and fencing work and revegetation efforts remain intact.

V. Slides

The slide log and slides are contained in Appendix B.



APPENDIX A

PAYMENT REQUEST NO. _____
 FROM _____ October 26, 1985 TO _____ June 3, 1985

PROJECT NAME _____ MINE SEAL PROJECT, PHASE 9
 LOCATION LEWIS & CLARK AND JEFFERSON CO., MT PROJ. NO. IFB 4316-G
 NAME OF CONTRACTOR ALLEN ELECTRIC, INC. ADDRESS 2101 NORTH MAIN HELENA, MT 59601

CHANGE ORDERS			CONTRACT STATUS			
No.	Description	Amount	Total Amount	Completed Amount	Uncompleted Amount	Per Cent Complete
1	SEE ATTACHED CHANGE ORDER #1	265.50	9,991.88	9,395.25	-0-	100
Total Change Orders			265.50	265.50	-	
CONTRACT TO DATE INCLUDING CHANGE ORDERS			10,257.38	9,660.75	0.00	100

TOTAL RETAINAGE \$ _____

SECURITIES ON DEPOSIT \$ _____

ADJUSTED RETAINAGE \$ _____

*For use only when securities are on deposit in lieu of 10% retainage.

COMPLETED TO DATE \$ 9,660.75

PLUS MATERIALS ON SITE \$ -0-

TOTAL COMPLETED TO DATE \$ 9,660.75

* 0% OR ADJUSTED RETAINAGE \$ -0-

TOTAL AMOUNT EARNED TO DATE \$ 9,660.75

LESS PREVIOUS PAYMENTS \$ 8,889.00

AMOUNT DUE THIS PAYMENT \$ 771.75

LESS 1% TAX \$ 7.71

TOTAL DUE CONTRACT \$ 764.04

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

Allen Electric, Inc.

(Contractor)

By John D. Allen

Date 7-3-85

RECOMMENDED BY:

L. C. Hanson Company

(Engineer)

By James G. Schin

Date 7/8/85

Approved By:

Montana Department of State Lands

Owner

Richard J. Hunt

7/9/85

ITEMIZATION OF QUANTITIES AND COSTS

ITEM	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT PRICE \$10	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	PERCENT COMPLETE
1.	BACKFILL MINE OPENINGS	LUMP SUM	1275.00	LUMP SUM	1,275.00	100
2.	FENCE - CHAIN LINK 6'	140 L.F.	8.85 L.F.	117.1 L.F.	1,036.34	100
3.	DOUBLE PANEL - 6' CHAIN LINK	4 EA	49.47 EA	3 EACH	148.41	100
4.	SINGLE PANEL - 6' CHAIN LINK	2 EA	30.00 EA	1 EACH	30.00	100
5.	GATE - METAL 5.5'	10 L.F.	18.50 L.F.	10 L.F.	185.00	100
6.	FENCE - WIRE TYPE CW OR CM	25 RODS	65.00 ROD	26.7 RODS	1,735.50	106.8
7.	DOUBLE PANEL - TYPE CW	12 EA	300.00 EA	12 EACH	3,600.00	100
8.	SINGLE PANEL - TYPE CW	2 EA	175.00 EA	1 EACH	175.00	100
9.	GATE - METAL 4'	10 L.F.	22.00 L.F.	10 L.F.	220.00	100
10.	DEADMAN	2 EA	125.00 EA	-0-	-0-	100
11.	INSTALL STATE-FURNISHED SIGNS	16 EA	15.00 EA	16 EACH	240.00	100
12.	SEEDING, FERTILIZING, MULCHING	LUMP SUM	750.00	LUMP SUM	750.00	100
					\$9,395.25	
CHANGE ORDER NO. 1					265.50	
TOTAL					<u>\$9,660.75</u>	

2.4 CHANGE ORDER

Order No. One (1)

Date: July 2, 1985

Agreement Date: June 10, 1985

NAME OF PROJECT: MINE SEAL PROJECT, PHASE 9

Lewis and Clark and Jefferson Counties, MT IFB 4316-G

OWNER: Montana Dept. of State Lands

CONTRACTOR: ALLEN ELECTRIC, INC.

The following changes are hereby made to the CONTRACT DOCUMENTS:

Justification: Additional dozer work and seeding required at MAUPIN CREEK NO. 1 site not anticipated in original work.

Change to CONTRACT PRICE: Add \$ 265.50

Original CONTRACT PRICE \$ 9,991.88

Current CONTRACT PRICE adjusted by previous CHANGE ORDER \$ -0-

The CONTRACT PRICE due to this CHANGE ORDER will be (increased) (decreased) by:

\$ 265.50

The new CONTRACT PRICE including this CHANGE ORDER will be: \$ 10,257.38

Change to CONTRACT TIME:

The CONTRACT TIME will be (increased) (decreased) by 0 calendar days.

The date for completion of all work ~~XXXXXX~~ June 8, 1985 (Date).
was

Recommended by: L. C. Hanson Company James E. Sahin, Engineer

Accepted by: Allen Electric, Inc. John F. Allen, Contractor

Approved by: Montana Dept. of State Lands Richard J. Jensen, Owner
Abandoned Mine Reclamation Bureau

FROM October 26, 1985 TO June 8, 1985

PROJECT NAME MINE SEAL PROJECT, PHASE 9

LOCATION LEWIS & CLARK AND JEFFERSON CO., MT PROJ. NO. 152 4311-3

NAME OF CONTRACTOR ALLEN ELECTRIC, INC. ADDRESS 2101 NORTH MAIN HELENA, MT 59501

CHANGE ORDERS			CONTRACT STATUS			
No.	Description	Amount	Total Amount	Completed Amount	Uncompleted Amount	Per Cent Complete
1		265.50	9,991.88	9,395.25	-0-	100
Total Change Orders			265.50	265.50	-	
CONTRACT TO DATE INCLUDING CHANGE ORDERS			10,257.38	9,660.75	-0-	100

TOTAL RETAINAGE	\$	COMPLETED TO DATE	\$ 9,660.75
SECURITIES ON DEPOSIT	\$	PLUS MATERIALS ON SITE	\$ -0-
ADJUSTED RETAINAGE	\$	TOTAL COMPLETED TO DATE	\$ 9,660.75
*For use <u>only</u> when securities are on deposit in lieu of 10% retainage.		* 0% OR ADJUSTED RETAINAGE	\$ -0-
		TOTAL AMOUNT EARNED TO DATE	\$ 9,660.75
		LESS PREVIOUS PAYMENTS	\$ 9,482.97
		AMOUNT DUE THIS PAYMENT	\$ 177.78
		LESS 1% TAX	\$ 1.78
		TOTAL DUE CONTRACT	\$ 176.00

I certify that this claim is correct and just in all respects and that payment or credit has not been received.

Allen Electric, Inc.
(Contractor)

By [Signature]

Date JUL 19 1985

RECOMMENDED BY:

L. C. Hanson Company
(Engineer)

By [Signature]

Date 7/24/85

Approved By:

Montana Department of State Lands
Owner

[Signature]

7/26/85

ITEMIZATION OF QUANTITIES AND COSTS

SN	DESCRIPTION	ESTIMATED PLAN QUANTITY	UNIT PRICE BID	UNITS OF WORK COMPLETED TO DATE	TOTAL COST OF COMPLETED WORK	PERCENT COMPLETE
1.	BACKFILL MINE OPENINGS	LUMP SUM	1275.00	LUMP SUM	1,275.00	100
2.	FENCE - CHAIN LINK 6'	140 L.F.	8.85 L.F.	117.1 L.F.	1,036.34	100
3.	DOUBLE PANEL - 6' CHAIN LINK	4 EA	49.47 EA	3 EACH	148.41	100
4.	SINGLE PANEL - 6' CHAIN LINK	2 EA	30.00 EA	1 EACH	30.00	100
5.	GATE - METAL 5.5'	10 L.F.	18.50 L.F.	10 L.F.	185.00	100
6.	FENCE - WIRE TYPE CW OR CM	25 RODS	65.00 ROD	26.7 RODS	1,735.50	106.8
7.	DOUBLE PANEL - TYPE CW	12 EA	300.00 EA	12 EACH	3,600.00	100
8.	SINGLE PANEL - TYPE CW	2 EA	175.00 EA	1 EACH	175.00	100
9.	GATE - METAL 4'	10 L.F.	22.00 L.F.	10 L.F.	220.00	100
10.	DEADMAN	2 EA	125.00 EA	-0-	-0-	100
11.	INSTALL STATE-FURNISHED SIGNS	16 EA	15.00 EA	16 EACH	240.00	100
12.	SEEDING, FERTILIZING, MULCHING	LUMP SUM	750.00	LUMP SUM	750.00	100
					\$9,395.25	
CHANGE ORDER NO. 1					265.50	
TOTAL					<u>\$9,660.75</u>	

Supplement to
Payment Request No. 3 (Final)
MINE SEAL PROJECT, PHASE 9
IFB 4316-G

Explanation of Supplement to Payment Request #3 (Final)

The amount for "LESS PREVIOUS PAYMENTS" on Page 1 of 2 of Payment Request No. 3 (Final) was incorrectly shown as \$8,889.00 rather than the correct amount of \$8,711.22. The Contractor is, therefore, due the difference of \$177.78 less the 1% tax, or \$176.00 as shown on the Attached Supplement.

APPENDIX B

Phase 9 Mine Seal Project
Mount Ascension, Montana City, & North Elkhorn Mining Districts
Jefferson & Lewis & Clark Counties
Slide Log

Mount Ascension Mining District

1. April, 1984 Before: Diehl Shaft #1 - for backfill
2. April, 1984 Before: Diehl Shaft #1 - for backfill
3. April, 1984 Before: Diehl Shaft #1 - for backfill
4. May, 1984 Before: Diehl Shaft #2 - for backfill
5. May, 1984 Before: Diehl Shaft #2 - for backfill
6. Oct., 1984 After: Diehl Shaft #2 - completed backfill
7. Oct., 1984 After: Diehl Shaft #2 - completed backfill
8. March, 1984 Before: May-Be-So adit - for backfill
9. March, 1984 Before: May-Be-So adit - for backfill
10. March, 1984 Before: May-Be-So adit - for backfill
11. March, 1984 Before: May-Be-So adit - for backfill
12. Oct., 1984 After: May-Be-So adit - completed backfill
13. Oct., 1982 Before: Mount Ascension shaft - for backfill
14. Sept., 1984 Before: Mount Ascension shaft - for backfill
15. Sept., 1984 Before: Mount Ascension shaft - for backfill
16. Oct., 1982 Before: Mount Ascension shaft - for backfill
17. Sept., 1984 Before: Mount Ascension shaft - for backfill
18. Oct., 1982 Before: Mount Ascension shaft - for backfill
19. April, 1982 Before: Red Letter shaft #1 - for backfill
20. Sept., 1984 Before: Red Letter shaft #1 - for backfill
21. Oct., 1984 After: Red Letter shaft #1 - reclaimed
22. Sept., 1984 Before: Red Letter shaft #2 - for backfill
23. April, 1982 Before: Red Letter shaft #2 - for backfill
24. Oct., 1984 After: Red Letter shaft #2 - reclaimed
25. April, 1982 Before: Susie shaft - for backfill
26. Sept., 1983 Before: Susie shaft - for backfill
27. April, 1982 Before: Susie shaft - for backfill
28. Oct., 1984 After: Susie shaft - reclaimed
29. Sept., 1984 Before: Touchstone adit - for backfill
30. June, 1985 During: Touchstone adit - drilling to blast
31. Sept., 1984 Before: Walker shaft #1 - for backfill
32. June, 1985 During: Walker shaft #1 - backfilling with ditchwitch
33. June, 1985 During: Walker shaft #1 - backfilling
34. June, 1984 Before: Walker shaft #2 - for backfill
35. Sept., 1984 Before: Walker shaft #2 - for backfill
36. July, 1984 Before: Walker shaft #3 - for backfill
37. July, 1984 Before: Walker shaft #3 - for backfill
38. June, 1985 During: Walker shaft #3 - mulching
39. June, 1985 After: Walker shaft #3 - reclaimed

Montana City Mining District

40. June, 1983 Before: Dike Lode - view of mine
41. Sept., 1984 Before: Dike shaft #1 & #2 - for fencing
42. June, 1983 Before: Dike shaft #1 - for fencing

43.	June, 1983	Before:	Dike shaft #2 - for fencing
44.	Sept., 1984	Before:	Gold Bug shaft - for fencing
45.	June, 1983	Before:	Gold Bug shaft - for fencing
46.	Oct., 1984	During:	Gold Bug shaft - chainlink posts set in concrete
47.	June, 1983	Before:	Kaiser shaft - for backfill
48.	Sept., 1984	Before:	Kaiser shaft - for backfill
49.	Oct., 1984	During:	Kaiser shaft - backfilling
50.	Oct., 1984	During:	Kaiser shaft - for backfill

North Elkhorn Mining District

51.	April, 1984	Before:	Maupin Creek - view of mines
52.	April, 1984	Before:	Maupin shaft #1 - for backfill
53.	April, 1984	Before:	Maupin shaft #1 - for backfill
54.	June, 1985	Before:	Maupin shaft #1 - for backfill
55.	June, 1985	During:	Maupin shaft #1 - backfilling
56.	June, 1985	Before:	Maupin shaft #1 - backfilling
57.	June, 1985	During:	Maupin shaft #1 - backfilling
58.	June, 1985	During:	Maupin shaft #1 - backfilling
59.	June, 1985	During:	Maupin shaft #1 - backfilling
60.	June, 1985	During:	Maupin shaft #1 - backfilling
61.	June, 1985	During:	Maupin shaft #1 - seed, fertilize, & mulch
62.	June, 1985	After:	Maupin shaft #1 - mulching
63.	Sept., 1984	Before:	Maupin shaft #2 - for backfill
64.	June, 1985	During:	Maupin shaft #2 - backfilling
65.	June, 1985	During:	Maupin shaft #2 - mulching
66.	April, 1984	Before:	Maupin shaft #3 - for backfill
67.	April, 1984	Before:	Maupin shaft #3 - for backfill
68.	June, 1985	During:	Maupin shaft #3 - backfilling
69.	June, 1985	During:	Maupin shaft #3 - mulching
70.	June, 1985	After:	Maupin shaft #3 - mulching
71.	April, 1984	Before:	Maupin shaft #4 - view of headframe
72.	April, 1984	Before:	Maupin shaft #4 - wood cover site
73.	April, 1984	Before:	Maupin shaft #4 - wood cover site
74.	Sept., 1984	Before:	Maupin shaft #4 - wood cover site
75.	June, 1985	After:	Maupin shaft #4 - completed wood cover
76.	March, 1984	Before:	McClellan shaft - for fencing
77.	March, 1984	Before:	McClellan shaft - for fencing
78.	March, 1984	Before:	Mill Creek shaft - for backfill
79.	March, 1984	Before:	Mill Creek shaft - for backfill
80.	Sept., 1984	Before:	Mill Creek shaft - for backfill
81.	March, 1984	Before:	Mill Creek shaft - for backfill
82.	March, 1984	Before:	Mill Creek shaft - view of dump
83.	June, 1985	During:	Mill Creek shaft - backfilling
84.	June, 1985	During:	Mill Creek shaft - backfilling
85.	June, 1985	During:	Mill Creek shaft - completed backfill
86.	June, 1985	After:	Mill Creek shaft - reclaimed
87.	July, 1983	Before:	Strawberry shaft - for backfill
88.	Sept., 1984	Before:	Strawberry shaft - for backfill
89.	March, 1984	Before:	Strawberry shaft - for backfill

